

## CHAPTER I

### INTRODUCTION

#### A. Background

Education is a process in which teaching and learning occurred, including the process that can affect the transferring of knowledge in each side resulted by many factor. In English, the term “Education” has been derived from two Latin words Educare (Educere) and Educatum. “Educare” means to train or mould. In this case in middle school, education always develop and improve based on the needs of student and the curriculum that the government used. Teaching learning activity in the classroom must be one of the way to explore student’s skill or ability in learning the concept.

Nowadays, developing student’s skill in every aspect become one of the focus in educational teaching learning activity. Moreover it becomes the country’s educational goal to make student as the center of activity. As for our country, Indonesia, one of the main points in the implementation of 2013 Curriculum is “how teachers are able to apply the model to the scientific approach (scientific approach) and approaches to student -centered learning (student center) , and emphasizes active student learning with a model of learning in discovery (Discovery Learning) , Learning based on project (project base learning) as well as solving the problem based learning (problem base learning)”, which stated from Dahari (2013).

Curriculum 2013, which is currently being implemented from elementary school, middle school until senior high school has a characteristic as a curriculum that integrates science and focus on the character development of children so that the student-centered approach with a scientific approach. For the basic rule of middle school education in Indonesia, it was based on Undang-undang RI Nomor 20 Tahun 2003 tentang sistem pendidikan nasional and Peraturan menteri pendidikan dan kebudayaan Republik Indonesia Nomor

68 Tahun 2013 tentang kerangka dasar dan struktur kurikulum sekolah menengah pertama/Madrasah Tsanawiyah.

While another curriculum which has been implemented in some school in Indonesia, such as Cambridge Curriculum has the same approach in student-centered and development of student's skill "The teacher's role is more that of a facilitator than instructor; the students are active participants in the learning process" stated by Jones, Leo (2007) in one of his book about student-centered classroom.

Many research has been done to improve student's skill in teaching learning activity, by using strategy, method or media. One of the requirement, in learning subject, in this case natural science subject, students must be active in physical and minds. As well as stated, "Active in science learning lies in two aspects, namely the active act of physical or hands-active on and think or minds-on"(National Research Council, 1996). Based on the characteristics of science, science teaching is directed to invite the students to find out and to do so it helps learners to obtain a deeper understanding of the nature things.

To accomplish that many research has been done and in order to explore student's skill, educator can start from the Cognitive aspect, psychomotor and affective aspect. One of the way for student to survive in the future education is in critical thinking aspect. The National Research Council (2012) assigned the "21st century skills" into three domains: the Intrapersonal Domain, the Interpersonal Domain, and the Cognitive Domain (with the cognitive domain including critical thinking).

Critical Thinking has many perspectives based on the aspect we focused on. In this education, especially middle school student aspect, it can be separated into several definition. Sawin in Marques (2004) stated that "To increase our coping ability we need critical thinking skills to cultivate flexibility and creativity in our decision making and problem solving". Johnson (2000) indicates, "Critical thinking is a type of thinking where a person must organize, analyze or evaluate given information".

For teaching and learning activity, critical thinking is one of the factors that can improve and help the understanding of the students towards several concept, especially in science. According to Elder (2007) and Scriven and Paul (1987), people who think critically can analyze their own thinking and realize they can improve their own reasoning and a highly cultivated critical thinker raises vital questions and problems, gathers and assesses relevant information, thinks open-mindedly, and communicates effectively.

Another definition of critical thinking expressed by Inch *et al.* (2006) that describes critical thinking as a process happen when someone rationally answer the questions and can not be answered it easily while the relevant or logic information was not available. In addition, critical thinking can also help us in assessing complex ideas systematically in order to understand the problems that arise or implications later. That's the reason why teach to improve and know the level of critical thinking will be important, especially for students.

Measuring critical thinking is one of the way to get the data of how students act and way of thinking towards some choosen content. The data can be used as the starter point to know the level of critical thinking and how to improve. It can help teacher to analyze about the appropriate media or method use to teach the concept. Noblitt, Vance, and Smith (2010) found that students in a junior forensic science course consistently performed better when they were allowed to present case studies that required critical thinking, as opposed to the traditional paper presentations.

As for the subject to measure the critical thinking, teacher can use any kind of subject and chapter, which can compile the data and as long as it represent one of the difficult lesson for students. In this paper, the writer choose to focus on Biology subject in secondary school.

Junior High School Science has biology as one of the subject in science which teach us about the living things and all nature phenomenon inside it. According to Mathai and Ramadas (2009) structural and functional levels of organization provide a standard way of analyzing systems. Campbell (2010)

also declared that the structure and function is correlated each other in biology system. Sense topic is one of the sub topic inside biology subject, teach about 5 special part of body, the process happen inside it and the disease that may be occur around it. This topic which tells students about the internal part and function of human body, will be closely to gain students' critical thinking because teacher can relate it to daily life, that's can be meaningful topic to student life.

As for the use of students' critical thinking on sense topic is work as the basic information to do the improvement in teaching learning activity. Teacher needs this to analyse what the things to be improved by the students. It has been deemed as a skill that should be gained in order to meet the today's societal expectations such as quick thinking, competent communication, and ability to resolve conflict and reconcile diverse perspectives (McCallister, 2004).

## **B. Research Problem**

According to the background about critical thinking in education and the relation with science subject, the research problem of this study is "How is the Development of Inch's Critical Thinking Multiple Choice Test on Sense Topic and It's Application to Examine The Profile in Junior High School Students?"

## **C. Research Questions**

Elaborating the research problem, the research attempts to answer the following questions:

1. How is the characteristic of multiple choice test that can measure critical thinking in Junior High School?
2. How is the development of test instrument that can measure student's critical thinking on sense topic in Junior High School?
3. How is the profile of students' critical thinking on sense topic in Junior High school?

#### **D. Limitation of Problem**

In order to make the research become more focused, the problem is limited as follow:

1. Critical thinking which used in this research is according to Inch et al. (2006), contain eight elements of critical thinking which as a related function. The elements are: purpose, question at issue, assumptions, point of view, information, concepts, interpretation and inference, and implication and consequences.
2. The test used in this research is multiple choice test based on eight indicator of inch's critical thinking.
3. Instrument question on critical thinking in this study has several characteristic. The characteristic of question which can measure the level of student's critical thinking, in this research used multiple choice that arrange based on eight elements and 2 or 3 represent sub elements of critical thinking Inch *et al.* (2006) and have validity and reliability with interpretation more than "prosperous".
4. Sense topic used in this study as the measurement is senses that limited by competency standard no. 1 until 2 that are attached in 2013 Curriculum in senses organ or Cambridge Curriculum in Junior High School. The topic focus on 5 senses in human body that connected in organs : eye, skin, ear, nose, tongue with 6 aspect : structure, function, disease, symptom, and how to treat.

#### **E. Research Objective**

This research objectives are specified as follow:

1. To describe characteristic of multiple choice test that can measure critical thinking in Junior High School.
2. To develop multiple choice test that can measure students' critical thinking in Junior High School.
3. To describe the profile of students' critical thinking in Junior High School.

## **F. Significance of Research**

The results of this study are expected to provide the following benefits:

1. For teachers, as the basic information about the criticals thinking of students to develop the method or media which appropriate in teaching senses concept. Teacher can reflect more from the data about how to use the result to increase student's critical thinking.
2. For students, as the motivation to develop more skill in the purpose to understand and to actively participate in teaching and learning activity. To make them train their critical thinking when doing the test.
3. For another researcher, as basic research to do more development and go to the next step, which more focus on a way to increase the level of critical's thinking of students, by doing various kind of method.
4. For educational institution, to get basic data and a set of test item which valid and reliable for evaluate and improve the quality of student's skill in the future.

## **G. Organization Structure of Research Paper**

In order to get organized structure of paper, this research paper is arranged based on the following organization structure:

1. Chapter I: Introduction

This chapter describes about the background and problem proposed as well as its limitation of the research. This also explains the purpose of the research and also the relevant of the research in the same field of study.

2. Chapter II: Literature Review

This chapter explains literatures and supportive theories or reference of the research. The basic explanation of critical thinking, how to measure, and the meaning of concept that is used as the topic of measurement.

3. Chapter III: Methodology

This chapter explains about research methodology, how the data are being collected, the instruments used, and the research plot.

4. Chapter IV: Result and Discussion

In this chapter, the product of test instrument and interpretation of all of the research data are served. Then the discussion are followed after, it analyses the result of research and its correlation between the result and the theories.

5. Chapter V: Conclusion and Recommendation

This is the last chapter of this research, all of research questions are concluded based on the result. The suggestion that comes from difficulties and obstacles found in this research are shared in recommendation part.